

# Stable Tactical-Grade MEMS IMU for Spin-Stabilized Rockets, Phase I



Completed Technology Project (2008 - 2008)

## Project Introduction

An Integrated MEMS IMU is proposed that will operate effectively in a spinning rocket up to 7 revs/sec. The IMU contains three gyroscopes and nine accelerometers on the same chip. The instrument designs have the low cross-axis sensitivity that permit the orthogonal gyros to sense the relatively smaller pitch and yaw rates in the presence of the much larger rate about the spin axis. An algorithm is proposed to combine the signals from the instruments to co-operatively obtain spatial reference. A lab experiment is planned during Phase I that will use available equipment and MSSA IMUs to prove the concept.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Milli Sensor Systems and Actuators, Inc.	Supporting Organization	Industry	West Newton, Massachusetts



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## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Goddard Space Flight Center (GSFC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

Maryland

Massachusetts

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Donato (dan) Cardarelli

## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.1 Detectors and Focal Planes